CACTUS AND SUCCULENT JOURNAL

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Photo by Baxter

Opuntia bigelovii Engelmann

see page 149

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THE CACTUS AND SUCCULENT SOCIETY OF AMERICA

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Managing Editor, SCOTT E. HASELTON, 5600 Tuxedo Terrace, Hollywood, Calif.

Advertising Manager, G. A. FRICK, 1800 Marengo St., Los Angeles, Calif.

Editorial Staff: JAMES WEST, 745 Fifth Ave., San Rafael, Calif.

ERIC WALTHER, 2667 McCallister Ave., San Francisco, Calif. EDGAR M. BAXTER, Bellflower Calif.

Vol. III MARCH, 1932 No. 9

CONTENTS

MORE ABOUT GIANT CACTI

EDITOR, CACTUS JOURNAL:

Attention is called to the article in the February 1932 number of the Cactus and Succulent Journal in which Mr. E. M. Baxter writes concerning the Giant Cactus in California. The extreme caution displayed by Mr. Baxter in actually verifying the occurrence of the Giant Cactus in California soil before publishing is to be highly commended, since so many tales have been circulated as to its distribution in California.

However, the article tends to create the impression that only an occasional Giant Cactus, such as the one visited by Mr. Baxter, is to be found on the California side of the Colorado River, and that these are more than likely the result of chance or accidental introduction rather than the natural distribution of the species. The several additional localities given for California by Mr. Baxter are included only with skepticism, although Mr. S. B. Parish, authority for those localities from Jepson's Manual, was one of Southern California's keenest field botanists.

The occurrence of Giant Cactus west of the Colorado River "above Yuma Dam" is certainly far from "semi-legendary". During March 1931 I was fortunately able to visit the above locality which is about five miles above the Laguna Dam intake. The cacti are largely on what is now a private homestead, but sometime it is hoped that this area will be permanently set aside as public property. On this visit I was accompanied by Dr. P. A. Munz of the Department of Botany of Pomona College.

The individual Giant Cacti above Laguna Dam were scattered over the rolling mesas to the west of the river and from one small knoll we were able to count over forty individual plants. The largest were about twenty feet in height, and most plants were unbranched, while a few bore one to several lateral branches.

Later in 1931, through the cooperation of Mr. R. E. Beckett, Superintendent of the U. S. Acclimatization Garden, Bard, California, we were able to secure three small joints and seed for propagation at Rancho Santa Ana Botanic Garden.

As regards the spreading of the Giant Cactus to California soil by the flood waters of the Colorado River, it is doubtful if such seeds ever grow, since the flood waters never reach the high rolling mesas but inundate the lower alkaline flats where Giant Cactus never seems to grow, even on the Arizona side. Those individuals above Laguna Dam are growing under conditions practically identical with those in Arizona, and the plants give every evidence of being a perfectly natural and normal part of the landscape—not a chance introduction!

In the same article it is unfortunate that Mr. Baxter has used the term "type specimen" to designate the plant of Giant Cactus which he found near Palo Verde, since usage of this term should be restricted to the specimen upon which the description of a new taxonomic entity is based. To the average reader the use of "type specimen" as applied to the Giant Cactus is especially confusing, since the same author, on the same page, but in his article on *Pereskiopsis gatesii* uses the same term in its correct application—namely to the original specimen of his new species.

CARL B. WOLF, Ph.D.,
Garden Botanist, Rancho Santa Ana.

[EDITOR'S NOTE: Mr. Baxter and the editorial staff appreciates this interesting letter from Mrs. Susanna Bixby Bryant's Botanic Garden in "Rancho Santa Ana." Letters, such as Mr. Wolf's are always welcome indeed and we hope he will send us further comments on any article appearing in the JOURNAL.]

Photo by Eric Walther

A rockgarden without signposts, by Lewis Allen, James West and the author. 1931 S. F. Garden Club show. Only material, Crassulaceæ.

The Lumbricus* Turns

By VICTOR REITER, JR.

A few years ago when "wireless" became radio and the mysteries surrounding the audion were intriguing the faddist of the day, the youth who attempted their explanation was regarded with awe and admiration. Now the faddist listens to his receiver little concerned with its mysteries and interested only in its results, while the youth who held the carpet now studies his meters in a laboratory leaving the public to its own devices.

The question is whether succulents will follow in the footsteps of radio. Will we find the great mass of garden lovers who still exchange "slips" across the back fence as flabbergasted by our avalanche of names as they have been in the days of fewer sneezes?

Since Africa has given up of its flowers and its many weeds and the Americas have yielded their brigades of pincushions to our hungry collectors can we still hope to have all this cellular tissue respected by the awe-struck sideliners? I doubt it. "Botanical interest" is an expression which lends its support to many a foreign weed, sparing it from the dump. True, one should know these names in order to avoid them but not in order to gargle their Greek and Latin sounds before the admiring "layman".

Even the hardiest enthusiasts are driven, like the post-war philatelists, to specialties. Their jelly-filled favorites are too numerous even for a bow and a nod. They fear to tread in the neighboring jungles of succulentia where they will not cut as imposing a figure as before their own pots and pans. Human interest wanes with such indigestion and, heaven knows, botanical nomenclature puzzles the vocal organs. The time must come when new names alone will not stimulate our cupidity; a time when plants will require more than a flashy name and a fleshy leaf to stir our jaded interest.

What we need is not more mediocre unrecommended material but a better understanding of the climatic adaptability and idiosyncrasies as

* Worm

well as the beauty of the better things we already have. Our gardens and greenhouses would profit if some of the species with which they are plagued could be cooked en masse and placed in herbaria away from prying eyes.

Inevitably we must become more critical of the raiment of our garden denizens whose beauty will remain long after the labels are effaced. A beautiful flower should never need to hide behind a frock coat with a card of introduction.

Our older branches of horticulture have gradually evolved from collection to selection and improvement of existing plants. Rosarians annually tear from their gardens thousands of beautiful roses which, in their judgment, they consider inferior to the higher attainments of the hybridist's art. To such an attitude can be attributed the remarkable improvements in our garden flowers. Through the years gardeners have captured the flora of the wild (which we will always love) fused their savage beauties and curbed them to the yoke of garden places, leaving us a heritage of flowers that only a patient past could produce.

When we of the newer cult of "succulentists" have drunk our fill of "rare" plants we too will become choosey. The succulents that win permanent places in our garden-culture will not have done so because of the millstones botanists hung around their necks but because of their individual excellence.

These remarks are not directed against new introductions and the true pursuit of science but against those euphuists and quasi-scientists who persist in perpetuating weeds and insist on using, unabridged, their most complex names.

A New *Echinocereus* or an Alpine Type of *E. fendleri* (?)

By J. P. HESTER, all photos by author

While searching Arizona for new species of cacti this season (1931) I found in the White Mountains, not far from Fort Apache, what may be a new Echinocereus or at least an alpine type of *E. fendleri* that has developed peculiarities by being separated from the parent stock for a time in different environment. These little plants are sparingly scattered over about five square miles of low ridges that are covered with oak brush, scrub cedar and pinyon timber.

The elevation is between 5000 feet and 6000 feet, and the region gets from 12 to 36 inches of snow winters and almost daily showers and several heavy rains during the summer months. The plants are usually found growing in a reddish, sandy loam derived from sandstones, shales and thin-bedded limestones. The temperature here in wintertime often hovers around 10 degrees above zero, F., for days.

That these cacti flourish in the timber but are never found growing in the open, park-like places that abound over that region may indicate that the violent and sudden changes of temperature, incident to those shelterless areas, destroy them.

Plants solitary or cespitose, erect, cone-shaped to cylindric, 7 to 25 cm. long, 6 to 8 cm. in diameter, but the average length is about 10 cm. (4"). The largest cluster found has 36 stems, but the bunches usually have from 4 to 8 stems, two-thirds of the members growing

A 10 inch *Echinocereus fendleri* (?) growing near Fort Apache, Arizona.

The Fort Apache *Echinocereus* and its pals, including *Coryphantha aggregata* in flower.

from fibrous, individual roots. Shoots often spring from the base of plants, but seedlings account for most of the increase in numbers. Ribs 10 to 15, in the percentages given in the following table compiled by carefully counting them on 100 mature plants:

10	ribbed	plants	12%
11	"	"	36%
12	"	"	36%
13	"	"	13%
14	"	"	2%
15	"	"	1%

Size of plants does not control this ratio, for stems having 10 ribs are often larger than those having 12 or more. *Echinocereus fendleri* is supposed to have from 9 to 12 ribs. None of my plants had less than 10 ribs, and 16% of them had more than 12 ribs.

New areoles are white-felted, circular, and from 3 to 5 mm (1/8" to 1/5") in diameter. Radial spines 5 to 9, usually about 7, 3 to 25 mm. (1/8" to 1") long, usually white or light brown or a mixture of the two colors. The longest radial is always white and points downward; from this spine, in both directions around the areole, the colors often alternate: brown, then white, around the circle; but the peculiar part is that the brown-surfaced spines are often white on the underside from base to tip. At times when the areoles bear but 5 or 6 spines a central spine may seem to be absent but a closer inspection tells us that the central is the brown, bulbous-based boy growing from the areole's upper circle, recurved and pointing toward crest of the plant and from 2.5 to 5 cm. (1" to 2") long. Porrect central spines are seldom seen. Yearling plants, of which several were found from 9 to 15 mm. (3/8" to 5/8") in diameter, have nothing but white spines, including centrals.

I found one peculiar cluster with 20 stems growing in deep shadows beneath a cedar tree and a dead yucca. The stems were 12" long and from 7/8" to 1 1/4" in diameter, with short, weak, gray, white and brown spines and from 10 to 11 ribs. These plants were prostrate with upturned tips, as they had been forced to that position to escape the fallen yucca.

Two other plants, both solitary, were seen; they were 25 cm. (10") high and about 15 cm. (3") in diameter. One of these grew in brush and shadows on a steep north slope.

Flowers not seen. Ovaries bright green, covered with from 25 to 35 white-woolly areoles, each bearing from 7 to 10 short, acicular, bulbous-based, white spines, one of which is a porrect central. Ripe fruit is dull red, 2.5 to 3 cm. (1" to 1 1/2") long, 1 to 2.5 cm. (3/8" to 1") in diameter, globose to barrel-shaped, filled with a strawberry-red pulp that is sweet and edible. Seeds black, microscopically tuberculate, 1.5 mm. long slightly pear-shaped, with hilum in small, truncated end.

Similar plants were found, a little later, 125 miles northward near Keams Canyon, growing beneath pinyon trees at an elevation of 7000 feet. Mrs. John D. Wright has a number of these and the Fort Apache plants under observation and will be able to utter the final word when they bloom again.

The Stapelieae

7. Huernia

(Continued)

By ALAIN WHITE *and* BOYD L. SLOANE

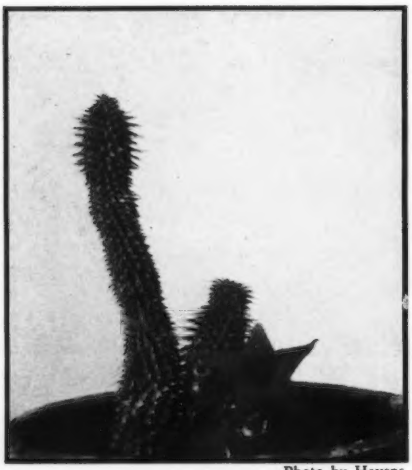


Photo by Havens.

FIG. 30. *Huernia pillansii* x1.0
Collection of W. I. Beecroft

The third group, *Calostelma,* is a small but very select one, for it includes the aristocrat of all *Huernias, H. Pillansii* N. E. Br. This species features the many-ribbed genera of the tribe, for it has between 20 and 24 somewhat spiral ribs; but the construction of the corolla and its division into ten points connect it absolutely with the *Huernias.* It is a small plant, two or three inches in height, with slender, graceful stems, so thickly covered with soft teeth as to appear hairy all over. The stem color is a fine shade of dark green, turning red in the sunlight. The flower is bell-shaped, with flaring lobes, the color pale yellow, densely covered with fine red spots, hairy all over the inner surface, the hairs tipped with red. The species is more delicate than most of the *Huernias,* and must be kept from too rich watering. It was discovered by N. S. Pillans and Dr. Marloth in the Karroo Desert in 1904, and its dedication to Mr. Pillans, together with the dedication to him of species in seven other genera of the STAPELIEAE, commemorates the splendid work he has done in collecting, describing and growing the STAPELIEAE and other succulents of South Africa.

There are two other *Huernias* of this third group, which while less striking have at least the advantage of being more easily secured. *Huernia longituba* N. E. Br. comes from the Kalahari Desert and *H. loeseneriana* Schlechter from the Transvaal. They are quite similar. *H. longituba,* as its name suggests, is marked by a long central corolla tube, which makes the flower deeply bell-shaped. The outside of the corolla is conspicuous for its twenty distinct nerves, while the inner side is a pale yellow white color, marked with red spots and having transverse lines near the bottom of the tube, the color deepening towards the center. *H. loeseneriana* is only half as large as *H. longituba,* though the coloring is very similar. The shape of the corolla is more open and its inner surface more hairy. In the former the markings are spots and in the latter they are much more irregular. It is difficult to differentiate between the stems of many of the species of *Huernia,* but those of *H. loeseneriana,* which are always four-ribbed and distinctly square in form, are easy to recognize.

In the fourth section of *Huernia, Podostelma,* with the inner corona horns shaped like small inverted feet toeing outward above the anthers, there are only two species and of these only the "Porcupine Huernia", *H. hystrix* N. E.

Photo by Sloane.

FIG. 31. *Huernia longituba* x.75

Br., has flowered with us. The pale yellow corolla, marked and dotted with red, is so covered with hairs, themselves tipped with red,

that the five smaller points of the corolla can hardly be seen at all. But the foot-shaped corona horns at the center are immediately recognizable. The stems are quite different from those of the other South African *Huernias,* and recall those of some of the tropical species. The second species, *H. appendiculata* Brgr., is very similar in general appearance to *H. hystrix.*

Photo by Havens.

FIG. 32. *Huernia hystrix* x.7
Collection of W. I. Beecroft

The stems perhaps are somewhat more deeply green, but the main difference, from which the species derives its name, is found in the inner corona, where a small appendage hangs down from the tip of the horns, like a little slipper dangling from the toe of each tiny foot.

Both species of *Podostelma* come from the Cape Province, and there also are found two other genera, each with a single species, which bear some relationship to the *Huernias.* These, as we know from the geographical chart in Fig. 3 (CACTUS JOURNAL, Oct. 1931), are *Huerniopsis* and *Diplocyatha.*

Huerniopsis is closely allied to Huernia by the structure of its inner corona. The broad corona lobes are produced over the anthers somewhat as in the *Orthostelma* type. But the outer corona is absent. There is one *Huernia* with no outer corona, *H. simplex* N. E. Br., a species from the Cape not represented in American collections. At first sight it would seem proper to join the "simple Huernia" with *Huerniopsis,* but there exists an important distinction between the two: *H. simplex* remains a true *Huernia* by reason of the ten-fold points of its corolla, while the pale purple flowers of *Huerniopsis decipiens* N. E. Br. have only the five points which occur in all the other genera of the STAPELIEAE. The stem too is not that of the *Huernias,* but inclines towards *Duvalia,* with its prostrate habit and the little stipules at the base of the teeth. This confusion in its characteristics has well justified the name which N. E. Brown gave it of the "deceitful Huerniopsis". It has a disagreeable odor, which becomes apparent only at nightfall, whence it is supposed to depend for pollenization on nocturnal flies. Its native habitat covers a considerable range in the interior of South Africa, in Bechuanaland and Griqualand, while in South West Africa it just crosses the Tropic into Hereroland.

Photo by Sloane.

FIG. 33. *Huerniopsis decipiens* x1.0

The second monotypic genus, *Diplocyatha,* also has a corona reminiscent of *Huernia.* It is double, the outer corona forming the ten-pointed design characterizing the *Huernias,* while the inner corona horns are similar to those in the section *Plagiostelma.* But the rest

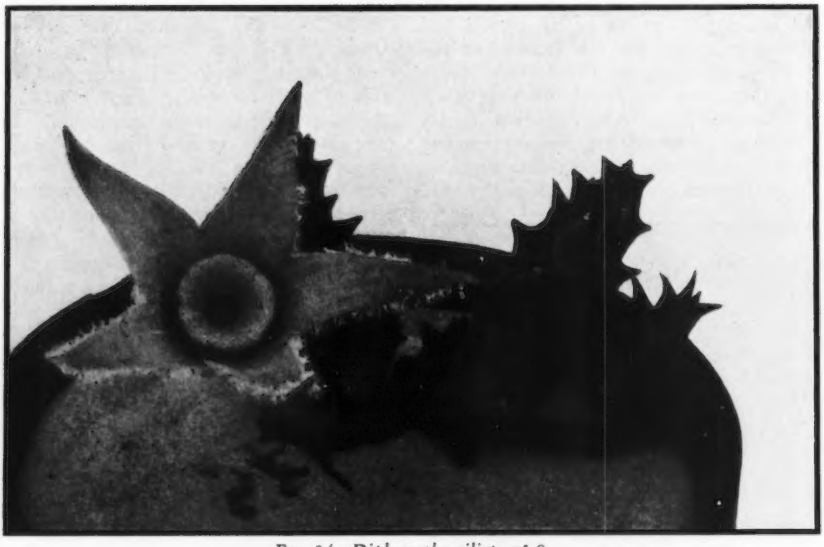


FIG. 34. *Diplocyatha ciliata* x1.0
From collection of Dr. R. H. Pulleine

of the plant is very distinct. The stem is again more like the *Duvalias,* short, four-sided, each rooting in turn as it grows. Most noteworthy is the extraordinarily developed ring, like an exaggerated *Orbea* ring, rising high in the deep throat of the ash-colored flower. From above it looks very much like an *Orbea,* and to see its true proportions one must cut the flower in cross-section, when the remarkable effect of the "double cup" becomes apparent. *Diplocyatha* comes from the Cape, and has the distinction of being the first species illustrated in Masson's STAPELIEAE NOVAE, 1796.

In a recent letter, Mrs. D. v. d. Bijl writes that all the STAPELIEAE on the South African veld "have one habit, that of growing under and around bushes. One often sees a quite dead bush, on the Karroo, and round it a thick mass of *Stapelia* in full bloom.

"Diplocyatha ciliata", she continues, "is such a showy one, with its nearly white flowers and the long white hairs on the sides of the petals moving with the least breath of wind, that one sees it a long way off. It grows in masses under the bushes, but is very troublesome to transplant, I think owing to the fact that on the rockery there is not enough shelter. It is seldom found out in the open in the veld. It does not seed very readily, and seems to depend more on increasing from the parent plant. I know the plant well, as our farm on the Karroo is one of the few places it is found on and Mr. Pillans years ago was very excited when he saw it in full flower, as they had not been able to find it for many years. I wish you could see the flowers—it is to my mind the finest of our *Stapelias."*

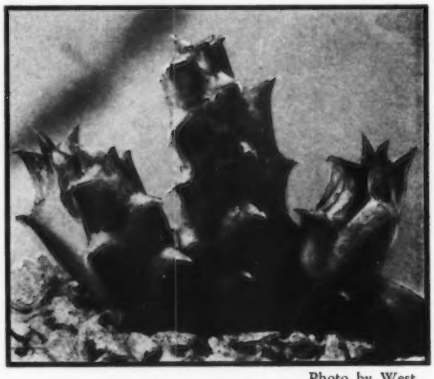


Photo by West.
FIG. 35. *Diplocyatha ciliata* seedling x1.0
Collection of James West

BRITTON AND ROSE REPRINT

Vol. I., (7th Installment)

The following 8 pages are reprinted from "The Cactaceae" through the courtesy of Carnegie Institution of Washington, D. C. Volume I was published in 1919 and is now completely out of print. The demand for this rare volume is so great that the CACTUS JOURNAL is undertaking reprinting.

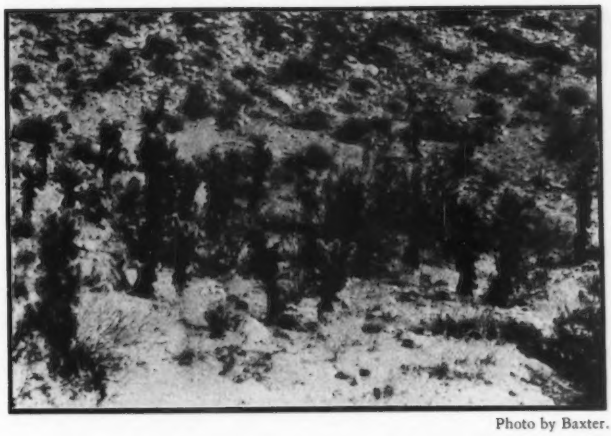


Photo by Baxter.

California Cacti

Opuntia bigelovii—Jumping Cholla

By E. M. BAXTER

An odd set of stories have been told of the jumping proclivities of *Opuntia bigelowii* or *O. bigelovii* as it is properly spelled. The explanation for the story that it actually jumps at a person or animal is this: Its spines are strongly barbed and its joints are easily detached. When a person merely touches the spines of the plant they take hold immediately, and with such tenacity that it feels as if a blow had been struck at the instant of contact. It is easy to believe that they have actually sprung off the plant to attach themselves to our body.

Opuntia bigelovii is our prettiest example of a cylindric opuntia. It is sturdily built, in proportion several times thicker in the stem than any other cholla. The branches live for two or three years and then die, soon afterwards dropping off, to leave the trunk bare (of branches, but not of spines) up to its crown. For about a year before they die the spines of the branches turn almost black in color, while the new growth is a creamy white and makes a pretty contrast.

The trunk is straight as an arrow, about three inches thick, and may grow as high as four or five feet. After reaching this height the plant seems to mature and the whole of it dies. Young branches that have broken off early in their life will take root and maintain the existence of the family.

The jumping cholla is found throughout the Colorado Desert area of Southern California and extends into Arizona and Baja California. Extensive as is its range, it grows in isolated colonies of from six to several hundred plants. These colonies may be miles apart, as in the northern part of Imperial County. It reaches its greatest density in the region of Palm Springs and the Whitewater Canyon.

It grows in a soil either heavy with sand, or else of a mixture of sand and decomposed granite. It transplants readily into the garden, but luckily has been protected recently by the conservation regulations. When once established it will grow about eight inches in height a year, making a circle of branches at the start of the new growing plant. As these will die in a few years if left on the parent plant they may be taken off and new plants started from them which we may use for distribution to the gardens of friends.

The flowers of all specimens that I have seen have been yellow in color, but in the original description and in all later ones copied from that the color is given as rose or purple. I cannot account for this difference as the purple colored flowers have never come to my attention.

Both the flowers and fruit are very likely to escape notice. The fruit is spineless and grows at the tip end of new branches. It is a half inch wide and about as long. It is hidden amongst the spines of the stem, and, although spineless, is filled with long glochids.

The name of "Ball Cholla" is given to it on account of the shape of its branches. These are nearly as thick as long, and the young ones that

are so easily broken off are always of these proportions. When fallen to the ground they look like a round ball covered with spines.

Opuntia bigelovii **Engelmann, Proc. Amer. Acad. 3: 307. 1856.**

Erect branching plant 5 feet high. Has single main trunk 3 inches in diameter—larger than other cylindropuntias. Branches regular, 2 to 8 inches long, ¼ to ½ as wide as long, cylindric, readily detaching, truncate.

Spines sheathed, 6 to 10, ½ inch long, radiating from an areole set on a nearly rectangular tubercle. Glochids many at base of areole, marginate in areoles at end of stems.

Flowers yellow; several at end of year-old branches; small, 1 inch wide. Fruit small; thin juicy rind; umbilicus conical, deeply depressed; tuberculate; spineless, but with many glochids. Seeds small; attached to carpel wall.

Cacti and Other Succulents

By SCOTT E. HASELTON

A unique and informative catalog* has been recently published by Western Nursery Company, 5859 S. Western Ave., Los Angeles. This 28-page 6x9 booklet contains brief descriptions of approximately eighty genera of cacti and succulents, besides listing hundreds of species.

What student of cacti has not wondered about the difference between a Coryphantha and a Neomammillaria? The following descriptions taken from "Cacti and Other Succulents" are understandable.

CORYPHANTHA

From Greek corymbos—head. A globular to cylindric plant, tubercle-covered. Tubercles grooved on upper surface; this groove distinguishes the genus

Coryphantha pycnacantha

from the genus Neomammillaria, in which tubercles are never grooved. Flowers are large, usually yellow, occasionally purple or red. Fruit large, ovoid.

NEOMAMMILLARIA

"New" mammillaria, one of the several genera into which the former genus Mammillaria has been divided, the other being Coryphantha. Stems globose, depressed-globose, or short-cylindric; covered with tubercles in spiralled rows, never on ribs; tubercles may be angled, without angles, or flattened, but never grooved on upper surface; spines usually short, radial; flowers small, red, yellow, pink or white, diurnal.

Neomammillaria longimamma

This little catalog also contains forty illustrations, a list of popular names of plants, list of terms used for plant descriptions and a list of the abbreviations used for the authority for the first name of the various species.

The need of a book on cacti, and especially succulents, handled in this manner will some day be presented to the cactus world. Perhaps this work will fall to Anne Raymond, the author of this catalog.

*(See advertisement back cover.)

Santa Barbara Flower Show

The Annual Spring Flower Show of Santa Barbara County will be held at the County Court House in Santa Barbara April 1, 2, 3, instead of the dates as previously announced. Cactus minded people will be especially interested in the following Section:

Section VIII. Succulents

1. Single specimen of cactus.
2. Single specimen of other succulent.
3. Collection of ten cacti.
4. Collection of ten other succulents.
5. Collection of ten sedums.
6. Collection of ten mesembryanthemums.
7. Collection of five agaves.
8. Collection of five aloes.

Classes 1 to 8 to be judged 50% on size and condition of plants and 50% on rarity.

10. Miniature succulent garden not to exceed two square feet, to be judged on attractiveness of design and material.

Members of the Cactus and Succulent Society should attend to see the interesting exhibits and to get acquainted with our northern members.

Eric Walther of San Francisco lectured before the San Francisco Garden Club on "The Huntington Botanic Gardens." He gave the same illustrated lecture before the Northern Branch Feb. 25 at the San Francisco Public Library.

A NEW BOOK

Reviewed by JAMES WEST

MESEMBRYANTHEMA N. E. Brown, Dr. A. Tischer and M. C. Karsten. Edited by E. J. Labarre. XXVI + 323 pp., 180 figures, 2 col. pl.—*L. Reeve & Co., Ltd.*, Ashford, Kent, England, 1931. $8.75.

This is the most important recent contribution to the literature on that group, and a book as distinguished as might have been expected from the names of those who collaborated in its production.

To avoid misapprehensions, and because for some time rumors have made the rounds that this book was to contain a complete reprint of Mr. Brown's revisionary work on the Mesembryanthema to date, it must at once be stated that it does not pretend to be a systematic work embracing all the known genera and species, and is not expected to be used for the purpose of identifying every unknown specimen. As its title, Mesembryanthema, not *The* Mesembryanthema, implies, it presents us with illustrations and descriptions of a selected number of species from several of the stemless genera, chosen with a view to showing species largely new or little known, and particularly handsome from the collector's standpoint or interesting to the botanist.

All lovers of succulents, and particularly of course the ever-growing band of Mesem-enthusiasts, will find a feast spread before their eyes. The illustrations, always so important an item in works of this kind, are quite above reproach. There are two colored plates, reproducing two sheets of Mr. Brown's renowned and masterly watercolors, the one of a group of *Conophyta,* the other a series principally of *Argyrodermata,* among the latter being a copy of the original drawing by Sydenham Edwards at Kew, from which t. 1573 in Botanical Magazine of *M. testiculare* was made; another the copy of a drawing of *M. octophyllum* Haw., also preserved at Kew. In addition there is a host, to be exact, 180, very fine halftones from various sources, among which are Mr. Labarre, the editor of the book, of whose very excellent work we have seen samples in these pages; Miss Edith Brown, whose portrait of her father formed one of our recent cover-pictures; Dr. I. B. Pole-Evans and Mr. T. N. Leslie, both with fine habitat-photographs from South Africa; Miss Karsten, Dr. Tischer and the late Fr. de Laet.

The work is trilingual, being written throughout in English, German and Dutch, the German version by Dr. Tischer, the Dutch by Miss Karsten. Here in America this fact will, if nothing else, furnish a splendid opportunity for a comparatively painless acquisition of some knowledge of two languages almost indispensable to the student of succulents.

After a preface by the editor explaining the genesis of the work, and one by the senior author, we find Notes on Cultivation by Dr. Tischer which contain some valuable hints, for instance that, more than any other succulents, the different groups or species of Mesembryanthemum differ from each other in their cultural requirements, and that imported plants should, after the first day or two, be kept quite moist rather than too dry, to induce quick rooting, and water be withheld only after turgidity has been restored.

Next, Miss Karsten contributes a most interesting chapter on Ecology (plants in relation to their environment) with a highly instructive discussion of the phenomenon of mimicry, which is responsible for so much of the attraction of the stemless Mesembs for the collector. The controversies regarding its meaning and origin are reviewed quite extensively, with interesting quotations from many original sources on the subject.

The second part of the chapter, concerned with windowed plants, is especially interesting, dealing as it does with that peculiarly African modification of structure so strikingly exemplified in some of our most highly regarded collector's plants. There are good diagrams illustrating cell-structure in the windows of *Lithops pseudotruncatella,* also a drawing of *Haworthia truncata* (with *Crassula columnaris* the only non-Mesem in the book), one of the queerest of its genus, and not yet in cultivation here. Evaluating the various interpretations as to the purpose of this fenestration, Miss Karsten tends to the view that it is decidedly not an adaptation against excessive insolation, as often claimed, but rather a necessary consequence of the semi-subterranean manner of growth acquired by these plants as a protection against excessive evaporation.

The remaining major part of the volume consists of a series of descriptions, in alphabetical order of genera, reaching from *Acaulon* to *Trichodiadema,* of about 150 species, the picture of each being accompanied by its description. The great majority of the latter are by N. E. Brown, others being by Dr. Tischer. However, the authorship of the several descriptions is not indicated. In many cases the description is amplified by notes on cultural and other peculiarities.

With so much to choose from, there is room only to pick out some of the high-lights. One of them is the first species on the list, *Acaulon rosulatum* N. E. Br., a rare and interesting plant about midway between *Titanopsis* and *Nananthus* generically, and as yet, it seems, unknown to our collectors. *Braunsia edentula* N. E. Br. is the species distributed among us as *Echinus apiculatus* L. Bol. The genus *Conophytum* is represented by no less than sixty species. This reviewer, who confesses to an ardent admiration for the genus, even though by force of circumstances, in the main a platonic one alas, must here express the hope that this gallery of portraits will shame one or the other reader into an effort to remedy the woeful lack of anything like a full representation of *Conophytum* in America.

Granted that the difficulties are great, in the facilities for obtaining imports or even seed, in the matter of cultivation and so forth; that they are not insuperable cannot be better proven than by these pages of photographs showing dozens upon dozens of species in the pink of condition, the prettiest and most floriferous specimens any collector would want to own, and the vast majority grown in England, Holland and Germany, that is, under climatic handicaps far more severe than any ever to be met with on these more fortunate shores.

The conophytophile will no doubt have to be triply armed with patience well above the ordinary; and to become enamored of this group he (or she) needs must possess, first of all, the not too common faculty of enjoying Beauty in the minutest of her incarnations, but, unless all the pictures and all the descriptions lie, such a person will surely be rewarded by an intimate contact with some of the very quaintest and most delicately made organisms in the entire range of natural forms.

There follow some gems of *Dintheranthi,* another

genus hard to get and harder to hold, if our experiences are typical; the beautiful and still unattained *Frithia pulchra* N. E. Br., uncommon *Gibbaea* and *Glottiphylla,* also *Imitaria Muirii* N. E. Br., a window-Mesem of excessive rarity, in nature no less than in cultivation. Next comes *Lithops* with several species of recent introduction, like *L. maughani* N. E. Br. Most interesting are the pictures of various species of *Mitrophyllum,* not the least striking thing about them being the fact, not generally known even among those who grow them from seed, that their mitres are for the greater part perched most amusingly on long, thin stems in mature plants.

At the end of the volume we find a glossary of botanical terms and a most useful and exhaustive bibliography, compiled by Miss Karsten, in which our JOURNAL is not forgotten.

All in all, the book is a credit to its authors and its editor, not forgetting the publishers, who did nobly by the volume, both in materials and execution.

If any criticisms are to be made, it would be as to the omission of detailed page-references to the place of publication of each species, which might well have been added to the descriptions, and would have been a great help to the student desirous of delving farther into Mesem-lore. True enough, the bibliography gives a complete list of sources as a whole, but considering the scattered nature of these sources, most of them periodical, the very recent date of most of the publications, making the INDEX KEWENSIS unavailable, and the consequent complete lack of any comprehensive index to genera and species, such references would have been of immeasurable labor-saving value. However, the book being addressed to plant-lovers rather than to technical dry-as-dusts, the fault is a very minor one and does not in the least impair its value to all collectors.

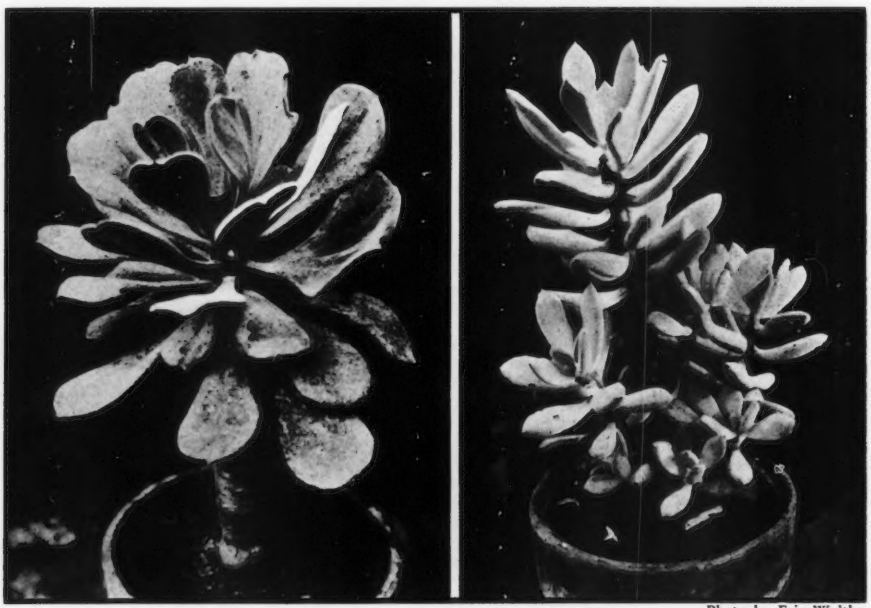


Photo by Eric Walther.

Puzzle No. 1 Puzzle No. 2

Some Puzzles

By ERIC WALTHER

In spite of the sometimes even derisive criticism leveled at taxonomic botanists in general, who are supposed to care for nothing except to publish as many new species as possible so as to immortalize (?) their name as author, the fact remains that taxonomy does serve a most useful purpose. In order to intelligently discuss any plant, or to even recognize it, some kind of a name, a handle as it were, is essential. As the total number of species known to science increases, so does the difficulty and complexity attending their clear recognition and definition. No wonder that sometimes an item will be named more than once, and that consequently changes become necessary, or that international congresses should have to meet in order to agree on uniform regulations governing such changes.

A good deal of such taxonomic work must always remain just plain drudgery, and if occasionally this is relieved by some such highlight as the discovery of an unknown item or detec-

tion of a new species, who will begrudge the taxonomist the satisfaction of seeing his name in print?

Even ordinarily his task is difficult enough, especially in the case of large genera, but when we come to cultivated exotics drawn from nearly all parts of the world, only wide experience and much research among dusty tomes, often rare volumes and in unfortunately often unavailable herbarium-collections can be the basis for original taxonomic work. All this presupposes, of course, that the material available for study is complete, and that the flowers are known, without which few botanists will venture to name unknown material. Lacking flowering material, only the most unscientific guesswork is possible, to avoid which is the reason we submit the two photos here reproduced. Picture number one shows an unknown, succulent plant given the writer by Mr. Ed. Howard of Santa Monica. Originally this is said to have been collected on Guadalupe Island, the home of the sea-elephants, and this example is now growing in the collection of V. Reiter, Jr., San Francisco. Careful check against all the recorded plants from the island reveals nothing strictly comparable with this, but making due allowance for changes due to cultivation, etc., we venture the guess, to be taken as nothing more, that this may eventually turn out to be *Talinum guadalupensis* Dudley. Quoting from "Studies in the Flora of Lower California and Adjacent Islands," by Alice Eastwood, Curator of Botany, in Proc. Cal. Academy of Sciences, Ser. 4; Vol. XVIII, No. 14, page 404, we find this described as having: "Leaves thick and fleshy, oblanceolate, 2 to 5 cm. long, all radial, root fusiform, fleshy, broadening at top into a short rhizoma extending laterally." Passing over the so far unknown flowers this is not so very unlike the present item as to make unreasonable our guess that this may yet turn out to be that so far not cultivated portulacaceous plant.

The other succulent here figured was first noted in the collection of our fellow-member, Paul Weber, Ventura Boulevard, Los Angeles. While it is said to have produced flowers, we have unfortunately not seen these, so that in the meantime even reference of this to the *Crassulaceae* is nothing but a rash guess. The most striking peculiarity of this unknown is the viscid or sticky stem, by which it is readily distinguished from *Graptopetalum amethystinum,* not so unlike it in other respects except for the somewhat thinner, more scattered leaves. We should greatly appreciate receiving flowers of puzzle number two.

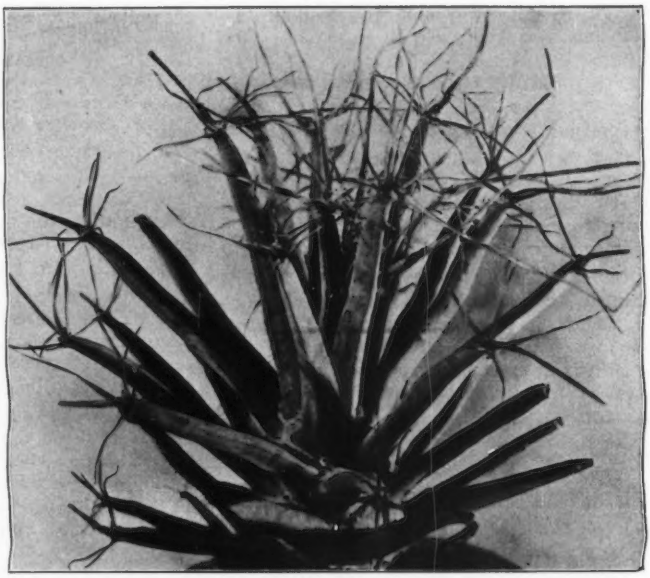
Leuchtenbergia principis, nine-year-old seedling x.5. flowering in Mrs. Wright's garden in Santa Barbara. Mrs. Wright says: "My Leuchtenbergia has grown for two and a half years in a rich loamy soil where there was much leaf mold, and it has been watered once every two weeks from May to October every summer. *But,* it is in full sunlight, and it has perfect drainage."

Photo by Kathe Schlange.

Leuchtenbergia principis

By G. A. FRICK

Leuchtenbergia principis (Hooker) is the orphan of the Cactaceae; this genus contains but one species; both genus and species were named for Eugene de Beauharnais, Duke of Leuchtenberg and Prince of Eichstadt, a French statesman and soldier (1781-1824).



The generic name is credited to Hooker and Fisher, but a careful examination of the early literature on the plant indicates that it was first described by Sir William Hooker in 1848, who says, "I willingly adopt a name by which the plant is known on the continent." In 1850, two years later, it was described by Fisher as his own genus, but Hooker's priority seems to hold.

This genus is closely related to *Echinocactus* and its segregates, having very familiar flowers and fruits, but in its elongated angled tubercles it looks very unlike any of them. Although Engelmann never saw the fruit, he suggested it might perhaps be a subgenus of *Mammillaria*, and Engelmann was not alone in his uncertainty of the genus this plant belonged to, for Hooker spoke of it resembling some aloid plant with stems like those of some cycads and was also called "Agave Cactus" by him because of its close resemblance to *Agave lophantha*.

Leuchtenbergia principis is said to be used by the Mexicans as a medicine, but just what its medicinal merits are could not be learned.

The tap root is very similar to a carrot, tapering to a point, single or branched; the tubercles are very woolly in their axils and have a bluish green color, and are always triangular; old tubercles gradually die off below, leaving broad scars on the trunk, spines are papery and thin, flowers reddish with a brown stripe down the middle of the petals.

Occurs in central to northern Mexico, where it prefers to grow in slate and lime formations, in very inaccessible desert mountainous ranges almost without water, and where other vegetation is very scanty. A dealer, when asked why they were so scarce among collections, told the writer that the average collector must lose at least three plants before he gets to understand that this plant is not a water lily.

THE CACTUS AND ITS HOME—Forest Shreve, Desert Laboratory of the Carnegie Institution of Washington, D. C., Tucson, Arizona. *Williams & Wilkins Company*, Publishers, Baltimore, Md., U. S. A., 1931. $3.00.

Review by JACOLYN MANNING

Sauntering with Dr. Shreve along the radiating paths of migration the cactus family traversed from their possible origin in arid central Mexico, to Florida and the Sea Islands, to the most southern tip of Texas and the ascending steppes of the Rio Grande, across New Mexico, with a more leisurely progress in Arizona until we reach the deserts of California and come to rest in the Isle of San Clemente; and renewing our jaunt with this master of keen observation and graphic comment, from a point of departure near the Isthmus of Panama down the east coast of South America with a detour to the interior of Brazil, the reader of this singularly satisfying volume has seen more beauty, learned more intimate and intriguing details of geography, and been shaken by a more maddening desire to know the face of nature in every country of this hemisphere, than since the glowing dreams of youth.

The five chapters in this slender volume are packed with fresh and absorbing information regarding the unique plants whose exclusion from a modern garden leaves that garden looking tame and a little monotonous. Chapter Four, "The Cactus In Its Home," is perhaps the most beguiling. In this chapter we tramp across the mesas, toil along limestone ledges, and slither down mountain slopes with the author, noting the habitat, the soil, the spacing, the elevation, the characteristic growth, the color and fragrance of bloom of the more modest of our cactus friends, while our attention is riveted by the "massive grace

of that truly astonishing plant, the Sahuaro, whose great feat of engineering is the support of several tons of water on a base less than two feet square." The description of the two other columnar cacti of the Boundary, *Lemaireocereus thurberi* and *Lophocereus schotti*, whets the desire to follow them south to their great stands in Mexico and Baja California, and so continue until every cardon forest of the Americas has been known and explored.

This book is notable for its thoughtfulness for the sometimes bewildered amateur gardener. In writing of classification (page 56) of cacti into Tribes and Sub-tribes, the author says: "There is no important reason for stressing these two classes of division, and it is much simpler just to regard the family as having ten subdivisions," which, of course, relate to *Pereskias, Opuntias* and the eight heads under *Cereus*. The author also speaks of the scientific nomenclature "which is often long and forbidding," and considers that, "as time goes on, suitable names will be selected by common usage—although, as things are now, it is impossible to speak or write about cacti, with any definiteness, without using their Latin names."

There are forty-four halftone illustrations, most of them from original photographs of marked beauty, of which we especially note the portrait on page 21, of *Opuntia santa-rita*, a pleasing likeness of delicate charm. We regret the omission of a page listing of these pictures, and also the absence of an index.

The book is well bound in sage green, the print easily read, the margins sufficiently wide for note making, if such is the reader's habit; the smooth paper does not glisten and is not refractory to the pencil. To quote once more from the one hundred and eighty quotable pages, "the cactus collector who has found his hobby an opportunity to do as he pleases in a life full of intricate adjustments to the desires of other people," will find this practical handbook on cactus a possession of the highest esthetic taste and the purest appreciation of Nature.

James West of San Rafael, California, has this to say of Dr. Shreve's book:

"Without being in the least pretentious, and written in an almost colloquial, yet fine and simple English, burthened with the absolute minimum of technical excess-baggage, it contains a most surprising amount of information, much of which will be new to even the oldest hands. How many of our readers, for instance, would have guessed that there are only three states in the Union without at least one species of cactus in their native flora?

"Chapter I is a sort of general introduction; Chapter II deals with structure, and is full of a multitude of facts, a good part of which are not found elsewhere in generally accessible books. Much of this information is obviously acquired at first hand. The intelligent reader will soon discover that the apparent simplicity of presentation is deceptive; it is the simplicity of great art; its hidden foundation is a very solid body of scientific knowledge, as one would expect from an authority of Dr. Shreve's standing.

"The third chapter deals with the classification of the family, the several tribes being very briefly and simply characterized. The author has as far as possible given "common" names to these subdivisions.

"The fourth chapter is the longest and the most valuable in the book. Aside from a brief mention of the other cactus-regions of the Americas, it deals almost exclusively with the species native to the United States, which are for the first time, to our knowledge, so comprehensively treated as a unit. Each of our principal cactus regions is surveyed, beginning with the SE Atlantic-Floridan area, then taking the Southwestern States in turn from Texas west to California. In combination with an excellent map of cactus distribution in the U. S. and with the Appendix, which contains, first, some statistics on number of genera and species in various areas and states, secondly a complete list of species for every Southwestern State and for the Eastern U. S., this chapter conveys about all the information on native cacti that any reasonable person could expect in so small a compass, together with their vernacular names, of which latter there is, by the way, a surprising number.

"Dr. Shreve is very clearly a lover of the desert as well as a botanist. What fine appreciation is shown, after surmising that a landscape architect new to the desert would probably want to give orders to clean up, rake up all the fallen twigs, etc., by the remark: "And what a forlorn spectacle the desert would present when this desecration was complete! . . . It takes only a short experience of Nature's gardening to become an admirer of it."

"A chapter on cultivation closes the volume. It gives useful hints both to dwellers in northern climes and those favored with milder conditions. The appendix contains a short list of publications on cacti, among which our Journal finds an honorable place. The illustrations are good throughout, and well selected to give an idea of the range of forms. Binding, paper and typographical work are all of a high order."

Encinitas Flower Show

Cactus and Succulents did more than their share in contributing towards the success of the Midwinter Flower Show at Encinitas. Without a doubt the outstanding exhibit was that of the Desert Nursery of Palm Springs which won the deserving sweepstake prize. Among others of the desert cacti shown by our member of the Desert Nursery was a 35 foot *Carnegiea gigantea* with one of the branches crested. First prize for finest display of rare cacti and succulents was won by McCabe Cactus Gardens. A wonderful display of crested cacti was shown and the prize was well earned.

Other splendid displays were made by the Knickerbocker Nursery of San Diego and the Soledad Rock and Water Gardens of Pacific Beach. The Alta Gardens of Encinitas made a splendid showing of well developed trees and plants of the Euphorbiaseae and received considerable publicity in the newspapers for their efforts. Kate Sessions was one of the exhibitors and showed some wonderful aloes and other succulents. E. O. Orpet and Dr. Houghton were judges. The Show was a success financially and was the largest yet given.

G. A. FRICK

No more orders for South Australian seeds can be filled at this time. All requests have been forwarded to Dr. Pulliene and a month or more will be required before seeds can be shipped. Every request will be taken care of even though you have not received an acknowledgement.

BOYD L. SLOANE

MRS. VAN DER BIJL, Great Brah River, C. P. S. A., will be pleased if orders for seeds will be sent to reach her before May Ist as she will be away from home for some time after that.

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BOOKS AND LITERATURE

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